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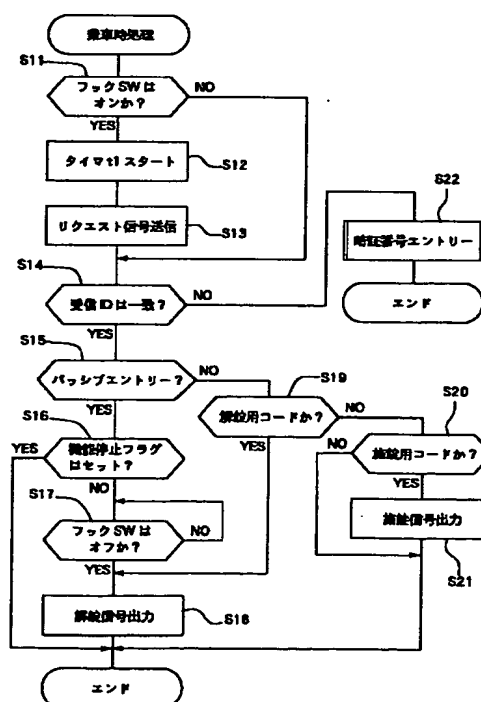
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(54) 【発明の名称】 車両用キーレスエントリー装置

(57) 【要約】

【課題】 車両用キーレスエントリー装置の安全性及び使い勝手を向上させること。

【解決手段】 本装置では、パッシブエントリーモードとアクティブエントリーモードとを備える。パッシブエントリーモードでは、アウトサイドハンドルの操作をトリガとして携帯機と固定機とで交信を行い、識別コードが一致したときに所定の制御を行う(S11~S18)。アクティブエントリーモードでは、解錠スイッチ又は施錠スイッチの操作によって交信を行い、識別コードが一致すると所定の制御を行う(S19~S21)。また、車内側に施錠した場合や携帯機の置き忘れが検出された場合には、パッシブエントリーモードの機能を停止させる機能停止フラグがセットされる(S16)。これにより、第三者の無断乗車を防止し、安全性や使い勝手を向上できる。



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(57) Abstract:

PROBLEM TO BE SOLVED: To enhance the safety and serviceability of a vehicular keyless entry device.

SOLUTION: This device includes a passive entry mode and an active entry mode. In the passive entry mode, communication between portable equipment and a fixed machine is triggered by operation of an outside handle and predetermined control is effected if identification codes are coincident (S11-S18). In the active entry mode, the communication is effected by operation of an unlocking switch or a locking switch and predetermined control is effected if the identification codes are coincident (S19-S21). If locking is done inside the vehicle or if the portable equipment is detected to have been left behind in the vehicle, a function stop flag for stopping the function of the passive entry mode is set (S16). This prevents unauthorized persons from intruding into the vehicle, whereby safety and serviceability can be enhanced.

[Claim(s)]

[Claim 1] Key loess entry equipment for vehicles characterized by forbidding the unlocking operation by the aforementioned pocket machine when it has the following and the aforementioned unlocking prohibition information is set. Pocket machine Have the control unit formed in a vehicles side, and the identification code transmitted from the aforementioned pocket machine and the identification code beforehand registered into the aforementioned control unit are collated. It is key loess entry equipment for vehicles which outputs a predetermined control signal when both identification codes are in agreement. the aforementioned pocket machine It is the Request-to-Send signal generation means which the aforementioned control unit generates the aforementioned Request-to-Send signal when handle operation of vehicles is detected, and is made to transmit to the aforementioned pocket machine by transmitting the transmitting code which comes to contain identification code according to a Request-to-Send signal. A collating means to collate the identification code transmitted from the aforementioned pocket machine according to the aforementioned Request-to-Send signal, and the identification code registered beforehand A unlocking propriety setting means to set unlocking prohibition information with the control means which output the aforementioned predetermined control signal when each aforementioned identification code is in agreement when locked within the aforementioned vehicles, and to reset the aforementioned unlocking prohibition information when it unlocks

[Claim 2] Prohibition of the unlocking operation by the aforementioned pocket machine is key loess entry equipment for vehicles according to claim 1 realized by prohibition of the output of the control signal about unlocking by the aforementioned control means.

[Claim 3] Prohibition of the unlocking operation by the aforementioned pocket machine is key loess entry equipment for vehicles according to claim 1 realized by the ban on transmission of the aforementioned Request-to-Send signal by the aforementioned Request-to-Send signal generation means.

[Claim 4] It is key loess entry equipment according to claim 1 to 3 for vehicles set the aforementioned unlocking prohibition information when judged with preparing further a judgment means judge whether the aforementioned pocket machine exists in the aforementioned vehicles after locking from the outside of the aforementioned vehicles, and the aforementioned unlocking propriety setting means existing in the aforementioned vehicles by the aforementioned judgment means after the aforementioned pocket machine's locking.

[Claim 5] The aforementioned judgment means is key loess entry equipment for vehicles according to claim 4 judged as the aforementioned pocket machine existing in the aforementioned vehicles more than a predetermined time when communication with the aforementioned pocket machine is possible after locking.

[Claim 6] Key loess entry equipment for vehicles according to claim 1 to 5 with which the identification code of two or more pocket machines can be set to the aforementioned control unit, respectively, and a setup of the aforementioned collating and unlocking prohibition information is performed for every identification code of each aforementioned pocket machine.

[Claim 7] The aforementioned control unit is key loess entry equipment for vehicles according to claim 6 which changes communication sequence with each aforementioned pocket machine according to the collating history of identification code.

[Claim 8] The aforementioned control unit is key loess entry equipment for vehicles according to claim 7 which changes the aforementioned communication sequence so that it may communicate previously from the pocket machine whose identification code corresponded last time.

[Claim 9] It is further operated by the aforementioned control unit by pre-operation for shifting to an operational state, and this operation performed under the aforementioned operational state. The engine starting switch for making an engine starting enabling signal output is prepared. the aforementioned control unit The shift to this aforementioned operation is forbidden until it is judged with the identification code by the side of the aforementioned pocket machine and the identification code by the side of the aforementioned control unit being in agreement, when operation before the above is performed. When judged with each aforementioned identification code being in agreement When operation before the above is performed with the 1st operation mode which permits the shift to this aforementioned operation and outputs the aforementioned engine starting enabling signal Permit the shift to this aforementioned operation and it has the 2nd operation mode which outputs the aforementioned engine starting enabling signal when judged with each aforementioned identification code being in agreement. Key loess entry equipment for vehicles according to claim 1 to 8 with which only a predetermined time controls operation of the aforementioned starting switch by the 2nd operation mode of the above at least when it unlocks with the aforementioned pocket machine.

[Claim 10] The aforementioned control unit is key loess entry equipment for vehicles according to claim 1 to 9 which enables unlocking operation at least in being in agreement with the operation pattern with which the operation pattern of the aforementioned handle was set up beforehand further.

[Claim 11] An operation switch is further formed in the aforementioned pocket machine, and it is key loess entry equipment for vehicles according to claim 1 to 10 which can transmit the aforementioned transmitting code also by operation of this operation switch.

[Claim 12] Key loess entry equipment for vehicles characterized by forbidding the unlocking operation by the aforementioned pocket machine when it has the following and the aforementioned unlocking prohibition information is set. Pocket machine Have the control unit formed in a vehicles side, and the identification code transmitted from the aforementioned pocket machine and the identification code beforehand registered into the aforementioned control unit are collated. It is key loess entry equipment for vehicles which outputs a predetermined control

signal when both identification codes are in agreement. the aforementioned pocket machine It is the Request-to-Send signal generation means which the aforementioned control unit generates the aforementioned Request-to-Send signal when handle operation of vehicles is detected, and is made to transmit to the aforementioned pocket machine by transmitting the transmitting code which comes to contain identification code according to a Request-to-Send signal. A collating means to collate the identification code transmitted from the aforementioned pocket machine according to the aforementioned Request-to-Send signal, and the identification code registered beforehand After locking [the control means which output the aforementioned predetermined control signal when each aforementioned identification code is in agreement, and] from the outside of the aforementioned vehicles, more than a predetermined time when communication with the aforementioned pocket machine is possible A judgment means to judge with the mislaying state of the aforementioned pocket machine having occurred, and a unlocking propriety setting means to set unlocking prohibition information when judged with generating of the aforementioned mislaying state by the aforementioned judgment means, and to reset the aforementioned unlocking prohibition information when it unlocks

[Claim 13] When it has the following and, as for the aforementioned control unit, operation before the above is performed When it is judged with forbidding the shift to this aforementioned operation and each aforementioned identification code being in agreement until it was judged with the identification code by the side of the aforementioned pocket machine and the identification code by the side of the aforementioned control unit being in agreement When operation before the above is performed with the 1st operation mode which permits the shift to this aforementioned operation and outputs the aforementioned engine starting enabling signal Permit the shift to this aforementioned operation and it has the 2nd operation mode which outputs the aforementioned engine starting enabling signal when judged with each aforementioned identification code being in agreement. Key loess entry equipment for vehicles characterized by only a predetermined time controlling operation of the aforementioned starting switch by the 2nd operation mode of the above when it unlocks with the aforementioned pocket machine. Pocket machine Have the control unit formed in a vehicles side, and the identification code transmitted from the aforementioned pocket machine and the identification code beforehand registered into the aforementioned control unit are collated. It is key loess entry equipment for vehicles which outputs a predetermined control signal when both identification codes are in agreement. the aforementioned pocket machine It is the Request-to-Send signal generation means which the aforementioned control unit generates the aforementioned Request-to-Send signal when handle operation of vehicles is detected, and is made to transmit to the aforementioned pocket machine by transmitting the transmitting code which comes to contain identification code according to a Request-to-Send signal. A collating means to collate the identification code transmitted from the aforementioned pocket machine according to the aforementioned Request-to-Send signal, and the identification code registered beforehand The engine starting switch for being operated by the control means which output the aforementioned predetermined control signal when each aforementioned identification code is in agreement, and pre-operation for shifting to an operational state and this operation performed under the aforementioned operational state, and making an engine starting enabling signal output

[Claim 14] It is key loess entry equipment for vehicles which is equipped with the following and characterized by the aforementioned control unit outputting a locking signal when are judged with it being in a door-closing state in a predetermined time and the identification code by the side of the aforementioned pocket machine and the identification code by the side of the aforementioned control unit are in agreement after the handle of the aforementioned vehicles is operated. Pocket machine Have the control unit formed in a vehicles side, and the identification

code transmitted from the aforementioned pocket machine and the identification code beforehand registered into the aforementioned control unit are collated. It is key loss entry equipment for vehicles which outputs a predetermined control signal when both identification codes are in agreement. the aforementioned pocket machine It is the Request-to-Send signal generation means which the aforementioned control unit generates the aforementioned Request-to-Send signal when handle operation of vehicles is detected, and is made to transmit to the aforementioned pocket machine by transmitting the transmitting code which comes to contain identification code according to a Request-to-Send signal. A collating means to collate the identification code transmitted from the aforementioned pocket machine according to the aforementioned Request-to-Send signal, and the identification code registered beforehand A door state judging means to judge whether the aforementioned vehicles are in a door-closing state, and control means which output the aforementioned predetermined control signal when each aforementioned identification code is in agreement

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the key loss entry equipment for vehicles which can control the door lock of various vehicles, such as an automobile, etc., without using a mechanical key.

[0002]

[Description of the Prior Art] The key loss entry equipment for vehicles which makes lock/unlock possible by electronic and electric remote operation is proposed variously, without using a mechanical key plate in recent years.

[0003] as key loss entry equipment for vehicles by the conventional technology, the key loss entry equipment of the request response mold which a request signal is transmitted from the fixed machine installed in the door side, and a pocket machine makes reception of a request signal a trigger, and transmitted identification code is known by operating the switch formed in the door side, for example, as indicated by JP,60-119873,A, JP,2-22834,B, etc.

[0004] Moreover, the system from which steering lock is released by electric remote operation is indicated by JP,3-148353,A etc.

[0005]

[Problem(s) to be Solved by the Invention] With the request response type conventional technology mentioned above, since identification code is made to transmit from a pocket machine according to the request signal from a fixed machine, it is not necessary to pick out a pocket machine from a bag etc., and lock/unlock of the door can be carried out by comparatively few operation. However, in order to make a request signal transmit from a fixed machine, it is necessary to give a certain trigger signal which requires transmission of a request signal from a fixed machine. For this reason, with the conventional technology, the special switch for a trigger signal input is formed near the door. However, if a special switch is formed in a door-panel front face etc., structure is complicated and destruction, an injury, etc. may be done by others.

[0006] Moreover, with the key loss entry equipment for vehicles, without being conscious of most existence of a pocket machine, release of a door lock, engine starting permission, etc. can be performed, and a series of operation of entrainment, engine starting, alighting, etc. can be performed smoothly. However, the guarantee of such smooth operation also has a possibility of on the other hand enabling easy entrainment of the third person who is not invited.

[0007] Furthermore, a door may be locked, forgetting a pocket machine in the vehicle interior of a room, since the presence of a pocket machine is thin, or a pocket machine may be forgotten in other places, and there is also a possibility that user-friendliness may get worse on the contrary.

[0008] Moreover, although steering lock and an ignition switch may be formed for an operational

manual switch in the key loess entry equipment for vehicles, a kind of interlock, such as carrying out rotation operation, is applied to this manual switch in many cases from viewpoints, such as operation mistake prevention, for example, pushing in a knob. Here, if identification code is collated when a knob is pushed in, although it will be based also on the length of collating time, switch operation cannot be performed smoothly but operability becomes low.

[0009] this invention is made in view of the above various technical problems, and the purpose is to offer the key loess entry equipment for vehicles which enabled it to improve user-friendliness while being able to perform lock/unlock etc. easily, maintaining reliability and *****.

[0010]

[Means for Solving the Problem] Then, that the above-mentioned technical problem should be solved, the key loess entry equipment for vehicles concerning this invention has forbidden the unlocking operation from a pocket machine under fixed conditions while making a Request-to-Send signal transmit by making handle operation into a trigger.

[0011] Namely, in invention concerning a claim 1, it has a pocket machine and the control unit formed in a vehicles side. The identification code transmitted from the aforementioned pocket machine and the identification code beforehand registered into the aforementioned control unit are collated. It is key loess entry equipment for vehicles which outputs a predetermined control signal when both identification codes are in agreement. the aforementioned pocket machine It is what transmits the transmitting code which comes to contain identification code according to a Request-to-Send signal. the aforementioned control unit The Request-to-Send signal generation means which generates the aforementioned Request-to-Send signal and is made to transmit to the aforementioned pocket machine when handle operation of vehicles is detected, A collating means to collate the identification code transmitted from the aforementioned pocket machine according to the aforementioned Request-to-Send signal, and the identification code registered beforehand, The control means which output the aforementioned predetermined control signal when each aforementioned identification code is in agreement, When unlocking prohibition information is set when locked within the aforementioned vehicles, it has a unlocking propriety setting means to reset the aforementioned unlocking prohibition information when it unlocks, and the aforementioned unlocking prohibition information is set, it is carrying out forbidding the unlocking operation by the aforementioned pocket machine as the feature.

[0012] At the time of entrainment or alighting, a user operates the door handle of vehicles. It is not necessary to prepare a trigger switch special to a door front face etc., and a special trigger switch can prevent that destruction, damage, etc. are carried out by the mischief etc. by making a Request-to-Send signal transmit from a control unit by detection of this handle operation. That is, although it is necessary to input a certain trigger signal to a control unit in order to output a Request-to-Send signal, reducing power consumption, if a trigger switch special for this reason is prepared in a door-panel front face etc., this trigger switch itself may be carried out for destruction, damage, etc. Then, in this invention, handle operation of vehicles was detected and it uses as a trigger signal to a control unit. In addition, power consumption becomes large although such a trigger signal can be made unnecessary in composition of making a Request-to-Send signal always transmit from a control unit.

[0013] If the user who got on locks within vehicles by the inside lock knob, unlocking prohibition information will be set and the unlocking operation by the pocket machine will be forbidden. Since the user has already got on, even if he forbids the unlocking operation by the pocket machine after entrainment, he does not produce any un-arranging, either. There is no possibility of unlocking though communication is performed between a pocket machine and a control unit on the other hand since unlocking prohibition information is set when a third person is going to get on without permission and operates a door handle, and safety increases.

[0014] Although communication is performed between a pocket machine and a control unit like invention which prohibition of unlocking operation here requires for a claim 2 when handle operation is performed after locking, it is realizable by not outputting the control signal for canceling a door lock. Or like invention concerning a claim 3, when the handle operation after locking is detected, a Request-to-Send signal is not transmitted but it can realize also by forbidding the communication of a pocket machine and a control unit itself. In addition, unlocking permission information can also be used instead of unlocking prohibition information. In this case, what is necessary is to reset unlocking permission information, when locked within vehicles, and just to set unlocking permission information, when other.

[0015] Moreover, a judgment means whether the aforementioned pocket machine exists in the aforementioned vehicles after locking from the outside of the aforementioned vehicles, and judge like invention concerning a claim 4 is prepared further, and when judged with the aforementioned unlocking propriety setting means existing in the aforementioned vehicles by the aforementioned judgment means after the aforementioned pocket machine's locking, the aforementioned unlocking prohibition information can also set.

[0016] Forgetting a pocket machine in the car, in order that a user may seldom be conscious of existence of a pocket machine, it may get off and may lock [from] outside vehicles. In this case, when a third person operates a door handle, communication is performed between a pocket machine and a control unit, and there is a possibility that a door lock may be unlocked. Then, when locked from the outside of a vehicle, whether the pocket machine is forgotten in the car judged, when forgotten, unlocking prohibition information was set and the unlocking operation by the third person is prevented.

[0017] Various methods are employable as the mislaying judging of a pocket machine. For example, the monitor camera which supervises the vehicle interior of a room may be formed, and a pocket machine may be detected visually. Moreover, when the hold place of a pocket machine is prepared for the vehicle interior of a room, a photoelectric switch, a microswitch, etc. can be prepared in this hold place, and the existence of a pocket machine can also be detected. Or like invention concerning a claim 5, after locking, more than a predetermined time, when communication with a pocket machine is possible, it can also judge with mislaying. That is, it can judge easily whether it was forgotten by the existence of the response from a pocket machine by only a predetermined time's repeating a Request-to-Send signal, and transmitting from a control unit.

[0018] Like invention concerning a claim 6, the identification code of two or more pocket machines can be set to a control unit, respectively, and a setup of the aforementioned collating and unlocking prohibition information can be performed to it for every identification code of each aforementioned pocket machine.

[0019] That is, each pocket machine can perform unlocking, locking, engine starting, etc. by communicating with a control unit, respectively. Moreover, since release prohibition information is also set up for every pocket machine, respectively, even when release prohibition information is set by mislaying of a certain pocket machine, a door lock can be unlocked with other just pocket machines. Thereby, the joint use of the vehicles by two or more users is realizable, maintaining safety and reliability.

[0020] When two or more pocket machines and communication are possible, a control unit can also change communication sequence with each pocket machine like invention concerning a claim 7 according to the collating history of identification code.

[0021] When communicating in each pocket machine and turn, the time of the waiting for turn becomes long and, as for the low pocket machine of communication ranking, the collating stage of identification code etc. becomes late to avoid interference. Therefore, in the low pocket machine of

communication ranking, each operation of locking, unlocking, engine starting, etc. cannot be promptly performed, so that there are many registered pocket machines, and, so that the communication duration per pocket opportunity becomes long. Then, the communication ranking of the high pocket machine of operating frequency is raised by extracting the collating history of identification code and changing communication sequence dynamically according to a collating history. Actual operating frequency can be made by this to be able to reflect in order of communication, and user-friendliness can be raised.

[0022] For example, communication sequence can be changed so that it may communicate previously like invention concerning a claim 8 from the pocket machine whose identification code corresponded last time. For example, there are three sets of pocket machines, A, B, and C, and when the case where early communication sequence is set as "A->B->C" is mentioned as an example and the pocket machine used last time is C, communication sequence is changed like "C->A->B." At least, since entrainment and alighting are simultaneous operation, if communication sequence is changed at the time of entrainment (at the time of unlocking), the communication latency time at the time of engine starting and alighting (at the time of locking) can be abolished, and prompt operation can be performed. Usually, like oil supply, a break, and getting on and off at the destination, in order [1 time of] to be under run and to carry out multiple-times operation of the pocket machine, convenience increases. In addition, when raising the communication ranking of the pocket machine used last time to a head so that clearly [invention of a claim 7], it does not restrict. Communication ranking of a specific pocket machine can be made into immobility, and can also change communication sequence between the other pocket machines. For example, if it is used every day most frequently or the communication ranking of the pocket machine which should be used is fixed, after other pocket machines are used accidentally, the operability of the pocket machine of the highest priority will not be spoiled. On the contrary, it is also possible to fix the pocket machine of the minimum ranking.

[0023] Like invention concerning a claim 9, to the aforementioned control unit Furthermore, it is operated by pre-operation for shifting to an operational state, and this operation performed under the aforementioned operational state. The engine starting switch for making an engine starting enabling signal output is prepared. the aforementioned control unit The shift to this aforementioned operation is forbidden until it is judged with the identification code by the side of the aforementioned pocket machine and the identification code by the side of the aforementioned control unit being in agreement, when operation before the above is performed. When judged with each aforementioned identification code being in agreement When operation before the above is performed with the 1st operation mode which permits the shift to this aforementioned operation and outputs the aforementioned engine starting enabling signal Permit the shift to this aforementioned operation and it has the 2nd operation mode which outputs the aforementioned engine starting enabling signal when judged with each aforementioned identification code being in agreement. When it unlocks with the aforementioned pocket machine, only a predetermined time can also control operation of the aforementioned starting switch by the 2nd operation mode of the above at least.

[0024] Although the starting switch which comes to unify for example, stearin Grock's release and the function of an ignition key can be prepared in a control unit, in order to prevent an operation mistake etc., it is desirable to apply a kind of interlock. For this reason, it constitutes so that a starting switch can be operated by pre-operation for making it shift to an operational state, and this operation actually operated under an operational state. Specifically, after pushing in a knob (pre-operation), what this knob is rotated for to a predetermined position (this operation) can constitute a starting switch so that release, engine starting, etc. of stearin Grock can be performed.

[0025] It is desirable to do authentication work called collating of identification code from viewpoints, such as safety, on the occasion of operation of a starting switch here. When pre-operation was performed and each identification code is [identification code is collated and] in agreement as one method, what permits the shift to this operation can be considered (the 1st operation mode). Although the shift to this operation is permitted as other methods when pre-operation is performed, unless each identification code is in agreement, what does not output an engine starting enabling signal can be considered (the 2nd operation mode). In order for collating of identification code to take some time, in the 1st operation mode, it does not shift to this operation smoothly from pre-operation, but there is a possibility of it being caught in respect of operation and giving a user admiration. Then, when unlocking by the pocket machine is performed, and only a predetermined time applies the 2nd operation mode, prompt and smooth operation of a starting switch is enabled, and operability is raised.

[0026] Moreover, like invention concerning a claim 10, a control unit can also enable unlocking operation at least, when further in agreement with the operation pattern with which the operation pattern of a handle was set up beforehand.

[0027] For example, when loss etc. carries out the case where the pocket machine has been confined in in the car, and a pocket machine, and a user operates a handle by the predetermined operation pattern, a door lock is unlocked and can get on. [at least] For example, it can attest by inputting the personal identification number of 4 figures of decimal digits by handle operation.

[0028] Moreover, like invention concerning a claim 11, an operation switch may be formed in a pocket machine, and further, in it, you may constitute so that a transmitting code can be transmitted also by operation of this operation switch.

[0029] Operating an operation switch can also make a transmitting code transmit from a pocket machine, without a user waiting for the Request-to-Send signal from the control unit by handle operation. Therefore, before approaching vehicles, unlocking etc. can also be performed from the distant place and user-friendliness improves.

[0030] Moreover, in invention concerning a claim 12, it has a pocket machine and the control unit formed in a vehicles side. The identification code transmitted from the aforementioned pocket machine and the identification code beforehand registered into the aforementioned control unit are collated. It is key loess entry equipment for vehicles which outputs a predetermined control signal when both identification codes are in agreement. the aforementioned pocket machine It is what transmits the transmitting code which comes to contain identification code according to a Request-to-Send signal. the aforementioned control unit The Request-to-Send signal generation means which generates the aforementioned Request-to-Send signal and is made to transmit to the aforementioned pocket machine when handle operation of vehicles is detected, A collating means to collate the identification code transmitted from the aforementioned pocket machine according to the aforementioned Request-to-Send signal, and the identification code registered beforehand, After locking [the control means which output the aforementioned predetermined control signal when each aforementioned identification code is in agreement, and] from the outside of the aforementioned vehicles, more than a predetermined time when communication with the aforementioned pocket machine is possible When judged with generating of the aforementioned mislaying state by judgment means to judge with the mislaying state of the aforementioned pocket machine having occurred, and the aforementioned judgment means When unlocking prohibition information is set, it has a unlocking propriety setting means to reset the aforementioned unlocking prohibition information when it unlocks, and the aforementioned unlocking prohibition information is set, it carries out forbidding the unlocking operation by the aforementioned pocket machine as the feature.

[0031] Furthermore, in invention concerning a claim 13, it has a pocket machine and the control

unit formed in a vehicles side. The identification code transmitted from the aforementioned pocket machine and the identification code beforehand registered into the aforementioned control unit are collated. It is key loess entry equipment for vehicles which outputs a predetermined control signal when both identification codes are in agreement. the aforementioned pocket machine It is what transmits the transmitting code which comes to contain identification code according to a Request-to-Send signal. the aforementioned control unit The Request-to-Send signal generation means which generates the aforementioned Request-to-Send signal and is made to transmit to the aforementioned pocket machine when handle operation of vehicles is detected, A collating means to collate the identification code transmitted from the aforementioned pocket machine according to the aforementioned Request-to-Send signal, and the identification code registered beforehand, The control means which output the aforementioned predetermined control signal when each aforementioned identification code is in agreement, It is operated by pre-operation for shifting to an operational state, and this operation performed under the aforementioned operational state. It has an engine starting switch for making an engine starting enabling signal output. the aforementioned control unit The shift to this aforementioned operation is forbidden until it is judged with the identification code by the side of the aforementioned pocket machine and the identification code by the side of the aforementioned control unit being in agreement, when operation before the above is performed. When judged with each aforementioned identification code being in agreement When operation before the above is performed with the 1st operation mode which permits the shift to this aforementioned operation and outputs the aforementioned engine starting enabling signal Permit the shift to this aforementioned operation and it has the 2nd operation mode which outputs the aforementioned engine starting enabling signal when judged with each aforementioned identification code being in agreement. When it unlocks with the aforementioned pocket machine, it is characterized by only a predetermined time controlling operation of the aforementioned starting switch by the 2nd operation mode of the above.

[0032] Moreover, in invention concerning a claim 14, it has a pocket machine and the control unit formed in a vehicles side. The identification code transmitted from the aforementioned pocket machine and the identification code beforehand registered into the aforementioned control unit are collated. It is key loess entry equipment for vehicles which outputs a predetermined control signal when both identification codes are in agreement. the aforementioned pocket machine It is what transmits the transmitting code which comes to contain identification code according to a Request-to-Send signal. the aforementioned control unit The Request-to-Send signal generation means which generates the aforementioned Request-to-Send signal and is made to transmit to the aforementioned pocket machine when handle operation of vehicles is detected, A collating means to collate the identification code transmitted from the aforementioned pocket machine according to the aforementioned Request-to-Send signal, and the identification code registered beforehand, It has a door state judging means to judge whether the aforementioned vehicles are in a door-closing state, and the control means which output the aforementioned predetermined control signal when each aforementioned identification code is in agreement. the aforementioned control unit When it is judged with it being in a door-closing state in a predetermined time after the handle of the aforementioned vehicles was operated and the identification code by the side of the aforementioned pocket machine and the identification code by the side of the aforementioned control unit are in agreement, it is characterized by outputting a locking signal.

[0033] If vehicles get off and a user operates a handle, a Request-to-Send signal will be transmitted towards a pocket machine from a control unit, and collating with the identification code by the side of a pocket machine and the identification code by the side of a control unit will be performed. When a user shuts the door of vehicles in a predetermined time, it is judged with a

door-closing state and a locking signal is outputted. Here, typically as a candidate for judgment of a "door-closing state", the door for getting on and off of vehicles can be mentioned. However, not only this but doors, such as a trunk, can be included.

[0034]

[Embodiments of the Invention] Hereafter, based on drawing 1 - drawing 13, the form of operation of this invention is explained in full detail.

[0035] 1. Form drawing 1 of the 1st operation - drawing 11 start the form of the 1st operation, and drawing 1 is explanatory drawing showing the appearance-composition of the key loess entry equipment for vehicles.

[0036] The outside handle 3 as "a handle of vehicles" is formed in the door 2 of vehicles 1. The key cylinder which was prepared near this outside handle 3 and which is not illustrated is connected with the door-lock mechanism 4 of the door 2 interior. moreover -- this door-lock mechanism 4 -- an inside handle (not shown) -- in addition, the lock knob 5 which projects up by the inside of a door 2 is connected

[0037] The pocket machine 11 is constituted including the casing 12 formed from synthetic-resin material etc., the unlocking switch 13 as an "operation switch" and the locking switch 14, and the control-section 15 grade later mentioned with drawing 2. The pocket machine 11 answers the request signal outputted considering operation of the outside handle 3 as a trigger, and outputs the transmitting code which comes to contain identification code. Here, a hundreds of MHz transmitting code is preferably transmitted by the about 300MHz radiation electromagnetic wave, for example. In the following explanation, a radiation electromagnetic wave is expressed as an RF signal. The composition of the fixed machine 31 as a "control unit" formed in vehicles 1 is explained with drawing 2.

[0038] Drawing 2 is the block diagram showing the function of vehicles key loess entry equipment. First, the composition of the pocket machine 11 is explained. The pocket machine 11 so that it may mention later, respectively A control section 15 and the storage section 16, The LF receive section 17 which receives the request signal transmitted as a guidance electromagnetic wave (henceforth "LF signal"), The trigger detecting element 18 which detects the trigger in a request signal, and the code detecting element 19 which detects the identification code as which it was enciphered in the request signal, It is constituted including the RF transmitting section 20 for transmitting a transmitting code as an RF signal, power supplies, such as a cell which is not illustrated, and the unlocking switch 13 and the locking switch 14.

[0039] Shape is taken by CPU etc., and a control section 15 answers a request signal, and generates a transmitting code. This transmitting code can be constituted including a trigger signal and the enciphered identification code (all over drawing, it is expressed as a "ID cord").

[0040] The storage section 16 consists of RAM etc. and identification code and the encryption information for enciphering identification code are memorized at least in the interior.

[0041] The LF receive section 17 receives the request signal from the fixed machine 31 by LF antenna 17A, such as a loop antenna. The request signal transmitted from the fixed machine 31 is constituted including a trigger signal and identification code.

[0042] The trigger signal contained in a request signal etc. is detected by the trigger detecting element 18. This trigger signal can be used as a Wake rise demand signal from power-saving mode. Moreover, the identification code contained in a request signal is detected by the code detecting element 19.

[0043] The RF transmitting section 20 transmits the transmitting code inputted from the control section 15 as an RF signal from antenna 20A.

[0044] Next, the composition by the side of the fixed machine 31 is explained. The fixed machine 31 as a "control unit" is constituted including the timer 36 grade with the control section 32

realized by CPU etc., the LF transmitting section 33 which transmits a request signal from antenna 33A, such as a loop antenna, the RF receive section 34 which receives the transmitting code from the pocket machine 11 through antenna 34A, and the storage section 35 so that it may mention later, respectively.

[0045] Moreover, the starting switch 39 which makes it come to unify the door switch 37 which detects the switching condition of a door, and stearin Grock unlocking of the stearin Grock mechanism 38 and the function of an ignition switch, the hook switch 40 which detects operation of the outside handle 3, and the buzzer 41 are connected to the fixed machine 31. Usually, each [these] switches are not beforehand formed in a body 1 side, and fixed machine 31 the very thing does not need to be equipped with it. In addition, all over drawing, a switch is expressed as "SW."

[0046] The starting switch 39 is equipped with each position of the START position for starting the ACC position for permitting the LOCK position for performing stearin Grock etc., and the electric supply to various accessory parts, ON position, and an engine as shown in drawing 3 (a). A starting switch 39 is operated in two stages by the pushing operation (pre-operation) for making knob 39A shift to a rotatable state, and rotation operation (this operation) of rotating knob 39A to a request position, as shown in drawing 3 (b). If knob 39A in an initial state b1 is grasped and pushed in as shown in drawing 3 (b) (b2), knob 39A will shift to a rotatable state. Next, a user does rotation operation to a desired position, with knob 39A grasped (b3). If a user lifts a hand, knob 39A will return to the same horizontal position as an initial state (b4). Thus, since a starting switch 39 is operated in two stages, operation which is not meant is not performed even when a user touches knob 39A accidentally. In addition, the state pilot switch 42 which can be grasped as an operating state detection means detects the operating state of the door-lock mechanism 4.

[0047] The control section 32 of the fixed machine 31 corresponds to "control means", generates a request signal and makes it transmit to the pocket machine 11 by making this request signal into LF signal by the detecting signal of a hook switch 40. Moreover, a control section 32 operates the door-lock mechanism 4, when the transmitting code received as an RF signal from the pocket machine 11 is decrypted, the identification code in this transmitting code and the identification code registered into the storage section 35 are collated and both identification codes are in agreement. Furthermore, like the after-mentioned, a control section 32 forbids the unlocking operation by the pocket machine 11 under predetermined conditions, and switches the operation mode of a starting switch 39.

[0048] Next, an operation of the form of this operation is explained with reference to drawing 4 - drawing 11 . In addition, the flow chart shown below may show an example of the flow of processing, and may be different from an actual program. Drawing 4 is a flow chart which shows the processing performed by the pocket machine 11 side.

[0049] First, it judges whether the request signal from the fixed machine 31 was received (S1), when a request signal is received, the transmitting code which comes to contain identification code is generated (S2), and this transmitting code is transmitted with RF signal (S3). Thus, the mode which operates the fixed machine 31 by remote control through the stage by handle operation, reception of a request signal, and transmission of a transmitting code is called "passive entry mode" on these specifications.

[0050] On the other hand, when the request signal is not received, it judges whether (S1:NO) and the unlocking switch 13 were operated (S4). When the unlocking switch 13 is operated, the transmitting code for unlocking which comes to contain the function code which shows identification code and unlocking operation is generated (S5), and it transmits to the fixed machine 31 (S3). When it is not operation of the unlocking switch 13, either, it judges whether (S4:NO), next the locking switch 14 were operated (S6). When the locking switch 14 is operated, the transmitting code for locking which comes to contain the function code which shows

identification code and locking operation is generated (S7), and it transmits to the fixed machine 31 (S3). Thus, without waiting for a request signal, a transmitting code is transmitted by operation of the unlocking switch 13 or the locking switch 14, and the mode which operates the fixed machine 31 by remote control is called "active entry mode" on these specifications.

[0051] The pocket machine 11 is equipped with two kinds of remote-operation modes in the passive entry mode performed considering operation of a door handle 3 as a trigger, and the active entry mode by the unlocking switch 13 or the locking switch 14 as above-mentioned. In addition, although especially illustration is not carried out, the operation mode by the conventional mechanical ignition key can also be added as "emergency mode."

[0052] Drawing 5 - drawing 11 show the processing by the side of the fixed machine 31. Drawing 5 shows roughly the flow of the main processings performed by the fixed machine 31 side. As main processings, it can divide roughly into processing M2, the engine starting processing M3, the locking processing M4 at the time of alighting, and the pocket machine mislaying prevention processing M5 after alighting at the time of inside locking when being locked by the in-the-car side after the unlocking processing M1 at the time of entrainment, and entrainment so that it may mention later, respectively.

[0053] Drawing 6 shows an example of the unlocking processing M1 at the time of entrainment. First, the signal from a hook switch 40 judges whether it was pulled that it is [3] an ON state, i.e., an outside handle, (S11). When the outside handle 3 is pulled, the timer for about 5 seconds which clocks a short time t1 comparatively is started (S12), and a request signal is made to transmit (S13). On the other hand, when the outside handle 3 is not operated, S12 and S13 are skipped and it moves to S14.

[0054] In S14, the identification code received by the RF receive section 34 judges whether it is in agreement with the identification code registered beforehand. When each identification code is in agreement, it judges whether it is passive entry mode (S15). Here, distinction of whether it is passive entry mode or to be active entry mode can be easily performed by changing the transmitting code transmitted for example, in each mode. Or it can also distinguish whether it is which the mode by the existence of operation of the outside handle 3.

[0055] When judged with it being passive entry mode, it judges whether the functional halt flag as "unlocking prohibition information" which stops the function in passive entry mode is set (S16). In addition, about a functional halt flag, it mentions later with drawing 8 .

[0056] When the functional halt flag is not set, after checking that it has been returned to waiting (S17) and the outside handle 3 that a hook switch 40 will be in an OFF state, a unlocking signal is outputted to the door-lock mechanism 4 (S18). Since it is the case where a halt of service by (S16:YES) and the passive entry is directed when the functional halt flag is set, S17 and S18 are skipped and processing is ended.

[0057] On the other hand, since it is the case where operation by active entry mode is performed when a user operates the unlocking switch 13 or the locking switch 14, it is judged with "NO" with the above S15. And it judges whether the transmitting code for unlocking was received (S19), and when it is a transmitting code for unlocking, it moves to S18 and a unlocking signal is made to output. When it is not a transmitting code for unlocking, it judges whether they are (S19:NO) and a transmitting code for locking (S20), and when it is a transmitting code for locking, a locking signal is made to output to the door-lock mechanism 4 (S21). In addition, processing is ended when it is not a signal for locking, either.

[0058] On the other hand, when judged with "NO" by S14 (i.e., when the identification code which has not received identification code (transmitting code) from the pocket machine 11 and which case [identification code] or received is not in agreement with the identification code by the side of the fixed machine 31), it shifts to the entry mode by the personal identification number (S22).

[0059] Drawing 7 shows an example in the entry mode by the personal identification number. First, it judges whether the hook switch 40 returned to the OFF state (S31), next after a time check is started with the above S12 in drawing 6, it judges whether time t1 passed (S32). When the outside handle 3 is being pulled in addition even if it ends processing and time t1 passes if the outside handle 3 is returned before time t1 passes, a user is notified of having carried out ringing of the buzzer 41 and having shifted to personal identification number entry mode (S33). That is, when it continues one or more [predetermined-time t] and the outside handle 3 is being lengthened, it can shift to personal identification number entry mode.

[0060] Next, if waiting (S34) and a hook switch 40 are turned [that a hook switch 40 returns to an OFF state, and] off, the operation of a buzzer 41 will be stopped (S35). A user inputs a four-digit number, when it is based on a personal identification number and only the number of times of predetermined operates the outside handle 3 (S36). When the input of all digits is completed, it judges whether (S37:YES), the inputted personal identification number, and the personal identification number registered beforehand are in agreement (S38), and when both are in agreement, a unlocking signal is outputted to the door-lock mechanism 4 (S39).

[0061] Next, drawing 8 shows an example of processing M2 at the time of inside locking. First, it judges whether the door-lock mechanism 4 is in a unlocking state (S41), and in being in a unlocking state, it resets a functional halt flag (S42). When it is not in a unlocking state, it judges whether it is locked or not, without whether it was locked within (S41:NO) and vehicles, and minding the control signal of the fixed machine 31 by the lock knob 5 (S43). When locked within vehicles, a functional halt flag is set (S44), when not locked within vehicles, S44 is skipped and processing is ended.

[0062] That is, if a user gets on and it locks by lock knob 5 grade (S43:YES), a functional halt flag will be set (S44). When the functional halt flag is set, a unlocking signal is not outputted as shown in S16 in drawing 6. Therefore, even if the third person who is not invited immediately after a user's getting on and locking from the inside lengthens the outside handle 3, since the passive entry function by the pocket machine 11 stops, this third person cannot get on without a user's permission.

[0063] Next, drawing 9 shows an example of the engine starting processing M3. First, it judges whether the door-lock mechanism 4 was electrically unlocked by the pocket machine 11 (S51), and when it is unlocking by the pocket machine 11, the timer which clocks the time t2 for about 30 seconds is started (S52). And it judges whether whether knob 39A of a starting switch 39 having been pushed in and pre-operation were performed (S53). The existence of pushing operation (push operation) of knob 39A is supervised until a predetermined time t2 passes (S54).

[0064] If knob 39A is pushed in (S53:YES), the fixed machine 31 will permit rotation of knob 39A immediately (S55), and will transmit a request signal (S56). Since rotation of knob 39A is permitted immediately, a user can do rotation operation of the pushed-in knob 39A smoothly. When collating of identification code of identification code of a line crack (S57) and both corresponds during the rotation operation, an engine starting enabling signal is outputted to an engine control unit (S58). Thus, rotation of knob 39A is permitted previously and the mode which collates identification code during rotation operation corresponds to "the 2nd operation mode." When a door lock is unlocked, only a predetermined time t2 shifts to the 2nd operation mode, and enables it to perform smooth operation.

[0065] When it unlocks on the other hand except pocket machines, such as unlocking by the mechanical key, or when it is judged with it not being in a unlocking state, (S51:NO) and a starting switch 39 will be operated by the 1st operation mode. That is, when it judges whether knob 39A was pushed in (S59) and knob 39A is pushed in, a request signal is transmitted, without permitting rotation of knob 39A (S60). And when the received identification code is in agreement

with the identification code registered beforehand, rotation of knob 39A is permitted for the first time (S61:YES) and here (S62), and an engine starting enabling signal is outputted (S63). When restarting an engine, followed, for example, got on, a starting switch 39 is operated by the 1st operation mode.

[0066] Next, drawing 10 shows an example of the locking processing M4 at the time of alighting. First, in S71, it is supervising whether the door 2 opened based on the detecting signal of a door switch 37. When a door 2 opens, it stands by until a hook switch 40 is turned on (S72). A request signal is transmitted when a user operates the outside handle 3 from the outside of a vehicle when a hook switch 40 is turned on that is, (S73).

[0067] And when it judges whether the identification code which received from the pocket machine 11, and the identification code registered into the fixed machine 31 are in agreement (S74) and both are in agreement, a timer 36 is started (S75) and a buzzer 41 is operated for example, at intervals of 1 second (S76). By intermittent working of this buzzer 41, a user knows that the locking operation by passive entry mode was attained. Next, when it supervises whether the door 2 closed (S77) and a door 2 is closed, a buzzer 41 is stopped (S78), a locking signal is outputted (S79), and for 3 seconds operates a buzzer 41 (S80). A user can check that it has been locked not only with the operation sound at the time of a lock but with the sound of a buzzer 41. On the other hand, by the time the 10-second room [about] predetermined time t3 passes, when a door 2 will not be closed, (S81:YES) and a buzzer 41 are stopped (S82), and processing is ended. In addition, although not illustrated especially, it can lock also with the active entry mode by the locking switch 14.

[0068] Next, drawing 11 shows an example of the pocket machine mislaying prevention processing M5. First, it judges whether it was locked from the outside of a vehicle (S91). For example, based on the signal from a door switch 37, and the signal from the state pilot switch 42, it can judge whether it was locked from the outside of a vehicle.

[0069] When locked from the outside of a vehicle, (S91:YES, for example, the timer which clocks the time t4 for about 10 seconds) is started (S92), and a request signal is transmitted regardless of operation of a door handle 3 (S93). And when it judges whether the received identification code and the identification code registered beforehand are in agreement (S94) and both are in agreement, it judges whether the predetermined time t4 passed (S95). A request signal is repeatedly transmitted until a predetermined time t4 passes, and collating of identification code is performed.

[0070] Since it is the case where it can be considered that the pocket machine 11 was forgotten in the car when a predetermined time t4 passes and (S95:YES) and the pocket machine 11 exist in or more [predetermined-time t] 4 communication within the limits namely, while only a predetermined time carries out singing of the buzzer 41 and demands cautions from a user (S96), the functional halt flag which stops service in passive entry mode is set (S97). Since it is judged with "NO" with the above S94 on the other hand when the user who possessed the pocket machine 11 moves out of the communication range before progress of a predetermined time t4, a timer is reset and processing is ended (S98).

[0071] Thus, when locked from the outside of a vehicle, the fixed machine 31 tries communication with the pocket machine 11, and it sets a functional halt flag while it is judged to be mislaying and outputs an alarm, when or more [predetermined-time t] 4 communication is possible. Therefore, since passive entry mode is stopped, a door lock is not unlocked only by a third person lengthening the outside handle 3. In addition, even when passive entry mode is stopped, a valid user can be unlocked from each root of operation of the unlocking switch 13, the input of a personal identification number, and a mechanical ignition key.

[0072] Thus, according to the form of this implementation constituted, the following effects are

done so.

[0073] To the 1st, a hook switch 40 can detect operation of the outside handle 3, and whole composition can be simplified to it because of the composition which makes a request signal transmit from the fixed machine 31 by operation of the outside handle 3, and reliability etc. can be sharply improved to it.

[0074] That is, the special switch to apply tends to attract the public notice, and a child etc. may be made to induce the urge to do mischief with the conventional technology which is made to expose a special switch on the surface of a door, and is established. However, with the form of this operation, in order to consider as the trigger input of request-signal transmission of the detecting signal of a hook switch 40, since the appearance of the vehicles carrying this equipment does not differ from the appearance of the usual vehicles at all, does not call others' attention and cannot induce a mischief easily, ***** and its reliability improve.

[0075] When locked within vehicles by the 2nd, in order to set a functional halt flag and to forbid unlocking by passive entry mode, unapproved entrainment of a third person can be prevented beforehand and safety improves.

[0076] Since a functional halt flag is set and unlocking by passive entry mode is forbidden to the 3rd when the pocket machine 11 is forgotten in the car, ***** can be raised sharply.

[0077] Mislaying of the pocket machine 11 can be detected with simple structure, without using a special sensor, a special camera, etc. for it, in order to judge to the 4th with it being in-the-car mislaying of the pocket machine 11, when or more [predetermined-time t] 4 communication is possible.

[0078] In order that only a predetermined time t2 may switch the operation mode of a starting switch 39 to the 2nd operation mode and may permit rotation operation of knob 39A to the 5th at the time of unlocking, after ending collating of identification code, as compared with the 1st operation mode which permits rotation operation, a starting switch 39 can be operated smoothly and operability improves. Moreover, identification code is collated within the rotation operation period of knob 39A, and the reliability of key loess entry equipment is maintainable, raising operability, since an engine starting enabling signal is outputted only when identification code is in agreement.

[0079] If it is a valid user even when eye the hatchet which can be unlocked, and the pocket machine 11 are not possessed by 6th operating the outside handle 3 according to a personal identification number, a door lock can be unlocked and user-friendliness will improve.

[0080] Since the 7th is equipped also with the active entry mode by the unlocking switch 13 and the locking switch 14 in addition to passive entry mode, a user can use the mode properly according to a situation, and user-friendliness improves. For example, when taking down a load from a backseat, a door lock can be locked only by operating the locking switch 14 in the place, without returning to the door 2 of a drivers side. Moreover, when driving by two or more persons and those who do not possess the pocket machine 11 try to take vehicles ahead of a driver, a door lock can be unlocked in the place distant from vehicles.

[0081] Since a door lock can be unlocked with active entry mode or the entry mode by the personal identification number even when an abeyance flag is set to the octavus and unlocking by passive entry mode is forbidden, safety and user-friendliness can be reconciled.

[0082] Since it can lock only by pulling up the outside handle 3 to the 9th, and shutting a door 2 to it at the time of alighting, it can lock in smooth operation also at the time of alighting, and its user-friendliness improves. Moreover, it is not locked even if it shuts a door 2 after a predetermined time t3 passes, since locking only of a predetermined time t3 is enabled at the time of alighting. It can follow, for example, can open and close freely, without locking a door 2, in frequenting in the car frequently like at the time of cleaning and maintenance, and user-

friendliness improves.

[0083] 2. Explain the form of operation of the 2nd of this invention based on the form, next drawing 12 of the 2nd operation. In addition, with the form of each following operation, the same sign shall be given to the same element as the component mentioned above, and the explanation shall be omitted. The feature of the form of this operation is in the point of changing communication sequence according to the collating history of identification code, when two or more pocket machines are registered.

[0084] Drawing 12 shows an example of the unlocking processing M1 at the time of entrainment by the gestalt of this operation. First, the newest communication sequence saved in the storage section 35 is read, and it sets beforehand (S101). For the facilities of explanation, Signs A, B, and C are given to three sets of pocket machines, and the newest communication sequence is made into "A->B->C."

[0085] Next, a hook switch 40 judges whether it is an ON state (S102), and, in the case of an ON state, a request signal is transmitted to the 1st pocket machine A based on the newest aforementioned communication sequence (S103). And it judges whether the identification code from the pocket machine A is in agreement with the identification code by the side of the fixed machine 31 in whether there was any response from the pocket machine A (S104). When regular identification code is transmitted from the pocket machine A, (S104:YES) and communication sequence are not changed (S105), but a unlocking signal is made to output (S106).

[0086] When there is no response from the pocket machine A, or when the mistaken identification code is received, based on (S104:NO) and the newest aforementioned communication sequence, a request signal is transmitted to the 2nd pocket machine B (S107). And when the response from the pocket machine B is inspected (S108) and regular identification code is received from the pocket machine B, communication sequence is changed into "B->A->C", the communication ranking of the pocket machine B is raised (S109), and a unlocking signal is made to output (S106).

[0087] When there is no response from the pocket machine B, or when the mistaken identification code is received, based on (S108:NO) and the aforementioned communication sequence, it switches to communication with the pocket machine C, and a request signal is transmitted to the pocket machine C (S110). When the response from the pocket machine C is inspected (S111) and identification code is in agreement like the following, communication sequence is changed into "C->A->B", the communication ranking of the pocket machine C is advanced (S112), and a unlocking signal is made to output (S106).

[0088] Thus, with the gestalt of this implementation constituted, in addition to the effect stated with the gestalt of the 1st operation, according to the operating frequency of two or more pocket machines 11 (A-C), communication sequence can be changed dynamically, and user-friendliness improves further. That is, when communication sequence is fixed, the low pocket machine 11 of communication ranking (C) always has the long time of the waiting for communication turn, and the useless latency time increases. Since operability changes like a operating vehicle or a rental car with communication ranking of the pocket machine 11 to possess, respectively when two or more persons do joint use of the vehicles, user-friendliness falls. Moreover, if use concentrates on the high pocket machine 11 of communication ranking, the cell of the specific pocket machine 11 will be exhausted earlier than others. Soon, although a user will use the low pocket machine 11 of the left-behind communication ranking, he always has to bear the long latency time. Such a problem is produced not only when two or more persons do joint use of the one vehicles, but when the one user possesses two or more pocket machines 11.

[0089] On the other hand, with the gestalt of this operation, in order to make the collating result of the last identification code reflect in order of communication, even if it is the low pocket machine 11 of communication ranking (C), by the first communication, ranking can be raised and

subsequent operations can be performed smoothly. In addition, when a margin is in the computer resource by the side of the fixed machine 31, it is also possible with which pocket machine it communicated when and to extract the detailed collating history and to change communication sequence more appropriately. For example, when the pocket machine 11 which is the morning, an afternoon, or every other day, and is used by two shift operations etc. is changed regularly, before the pocket machine 11 is switched, it is also possible to change use sequence beforehand. Moreover, communication ranking is fixed by considering the specific pocket machine 11 as a master, and you may make it change communication sequence only among other pocket machines.

[0090] 3. Gestalt drawing 13 of the 3rd operation is an example of processing M1 at the time of entrainment of the key loess entry equipment for vehicles concerning the gestalt of the 3rd operation. With the gestalt of this operation, when a hook switch 40 is turned on, the state of (S11:YES) and an abeyance flag is inspected (S16), and when the abeyance flag is set, processing is ended, without performing communication with the pocket machine 11. That is, the difference with the flow chart shown in drawing 6 is the point that S16 is performed to the degree of S11. Useless communication and collating processing can be avoided by this, and power consumption can be reduced.

[0091] In addition, if it is this contractor, it is possible to make additions, change, etc. various in the range which does not deviate not only from the form of each aforementioned implementation but from this invention. For example, it cannot pass over each flow chart mentioned above for an example of processing to be shown, but it can perform change and an addition of the turn of a step.

[0092]

[Effect of the Invention] Since handle operation is used as a trigger for making a Request-to-Send signal transmit according to the key loess entry equipment for vehicles concerning this invention as explained above, while being able to prevent that an exterior difference arises and being able to prevent the mischief by others etc., in order to use a directive weak transmission wave, the flexibility of the possession state of a pocket machine increases and user-friendliness improves.

[0093] Moreover, since the unlocking operation of a pocket machine based on handle operation is forbidden when the pocket machine after locking by the in-the-car side is forgotten, safety and ***** can be raised.

[0094] Furthermore, since only a predetermined time permits the shift to this operation from pre-operation and is enabling collating of identification code during this operation when it unlocks, a starting switch can be operated smoothly and operability and user-friendliness improve.

[0095] Moreover, when using two or more pocket machines, in order to change communication sequence according to an actual busy condition and operating frequency, user-friendliness improves.

[0096] Furthermore, since only the predetermined time is enabling locking operation based on handle operation at the time of alighting, while being able to perform locking operation at the time of alighting smoothly, after making a predetermined time pass, free getting on and off can be performed, and user-friendliness improves.

[Brief Description of the Drawings]

[Drawing 1] It is composition explanatory drawing showing the appearance composition of the key loess entry equipment for vehicles concerning the gestalt of operation of this invention.

[Drawing 2] It is the block diagram showing the functional composition of a pocket machine and a fixed machine.

[Drawing 3] It is explanatory drawing showing the composition and the operating instruction of a starting switch.

[Drawing 4] It is the flow chart which shows pocket machine side processing.

[Drawing 5] It is the flow chart which shows the flow of the overall processing by the side of a fixed machine.

[Drawing 6] It is the flow chart which shows the unlocking processing at the time of entrainment.

[Drawing 7] It is the flow chart which shows the unlocking processing by the personal identification number.

[Drawing 8] It is the flow chart which shows inside locking processing when a user locks from in the car.

[Drawing 9] It is the flow chart which shows engine starting processing.

[Drawing 10] It is the flow chart which shows the locking processing at the time of alighting.

[Drawing 11] It is the flow chart which shows the processing when forgetting a pocket machine in the car.

[Drawing 12] It is the flow chart which shows the unlocking processing at the time of entrainment concerning the gestalt of operation of the 2nd of this invention.

[Drawing 13] It is the flow chart which shows the unlocking processing at the time of entrainment concerning the gestalt of operation of the 3rd of this invention.

[Description of Notations]

1 Vehicles

2 Door

3 Outside Handle

4 Door-Lock Mechanism

11 Pocket Machine

13 Unlocking Switch

14 Locking Switch

15 Control Section

17 LF Receive Section

20 RF Transmitting Section

31 Fixed Machine

32 Control Section

33 LF Transmitting Section

34 RF Receive Section

39 Starting Switch

40 Hook Switch